

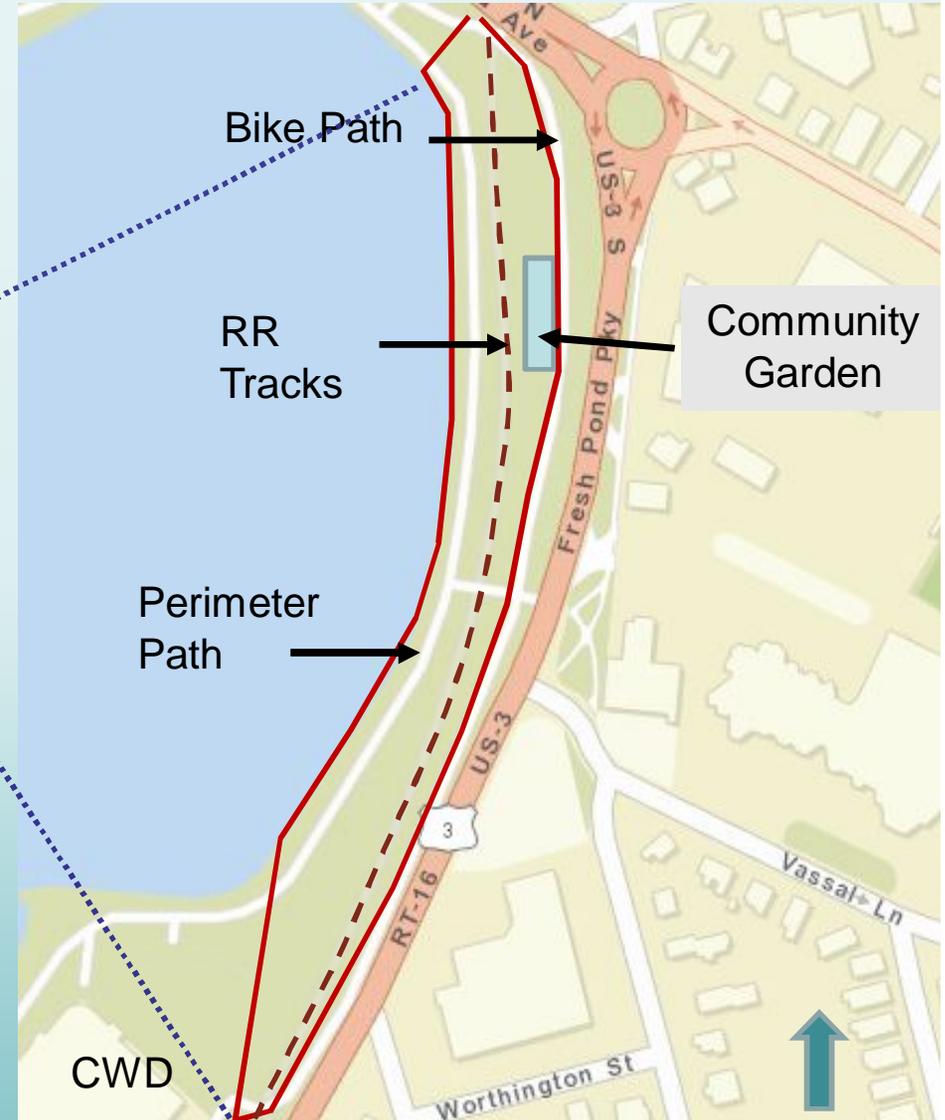
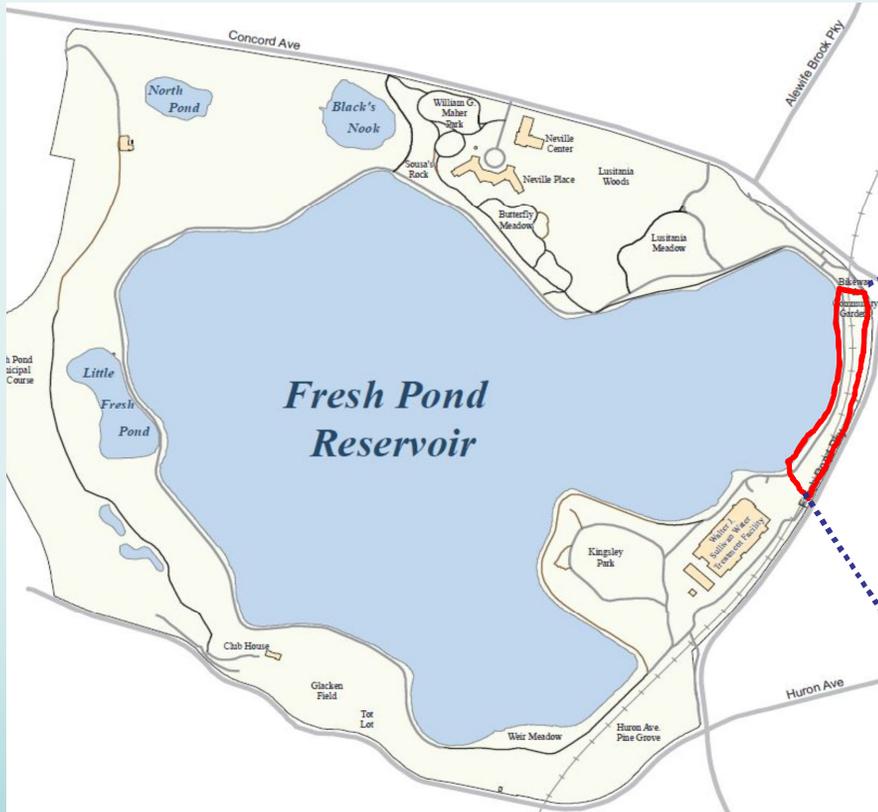


Cambridge Water Department Fresh Pond Drainage Improvements & Community Gardens Project

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Sharon Komarow, ASLA – Klopfer Martin Design Group

Conservation Commission Hearing, November 14, 2016

Project Location & Extents



Fresh Pond & Community Garden
Drainage Improvements Project

Fresh Pond Master Plan Vision Statement:

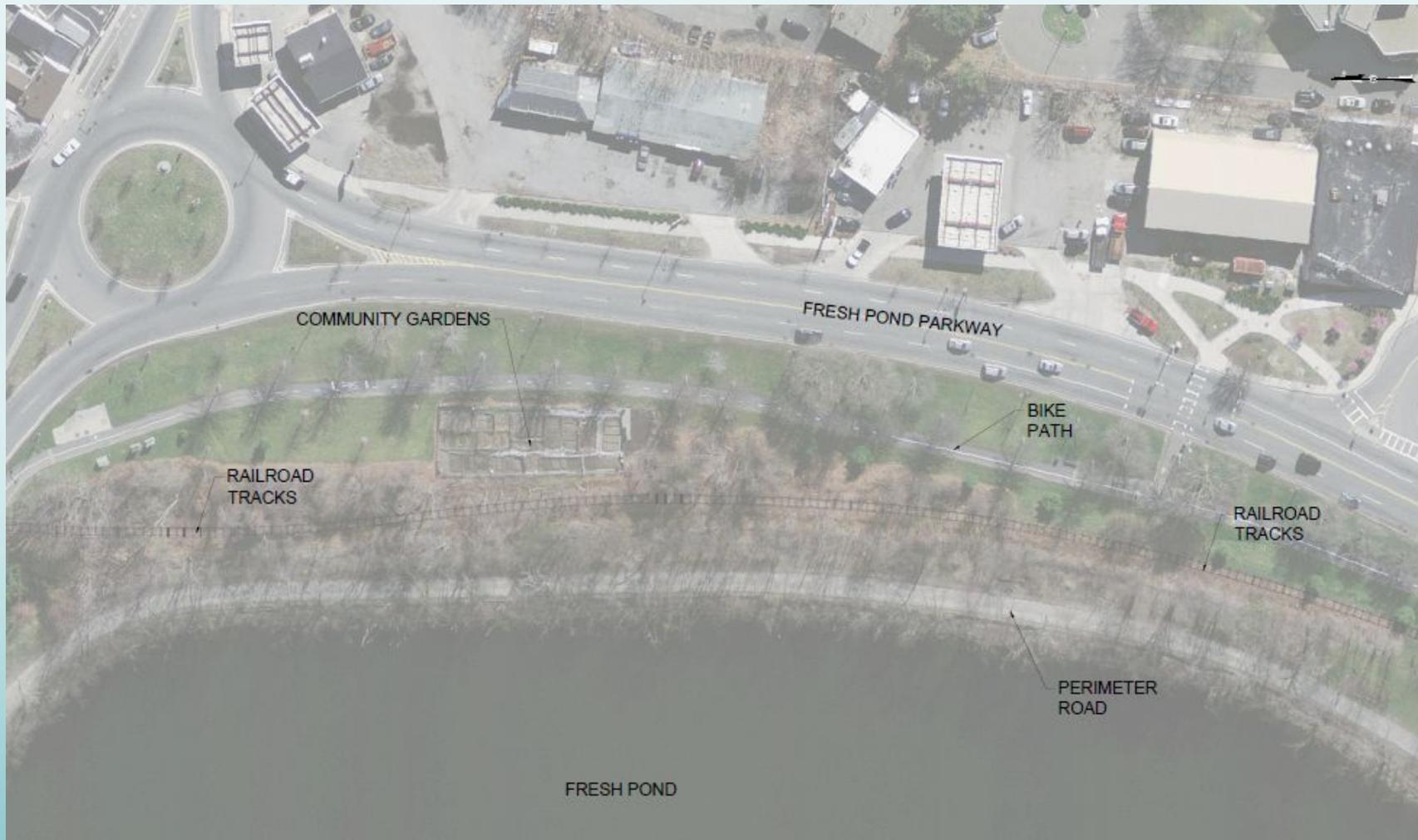
“...protecting and enhancing both the water quality of the Fresh Pond Reservation and its open space and naturalistic character”

“....preservation of water quality, recreational open spaces, natural green spaces, wildlife habitat and a refuge from hectic urban life”



Fresh Pond & Community Garden
Drainage Improvements Project

Existing Conditions & Issues



Issue: water quality & drainage

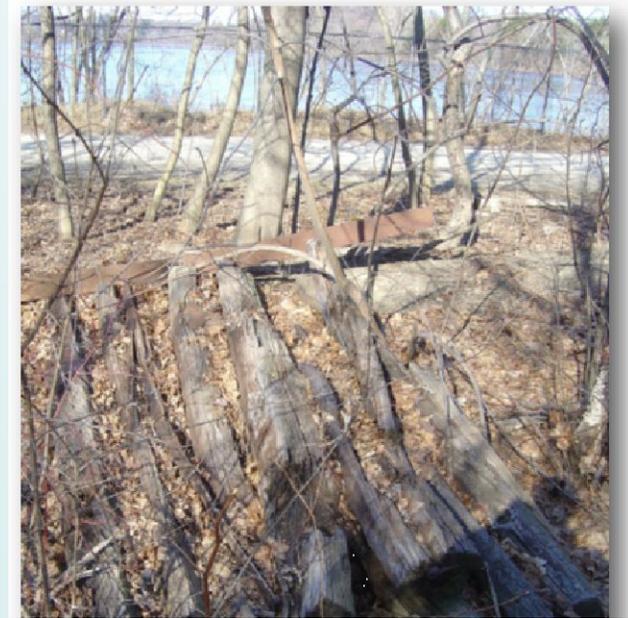


- Flooding and poor drainage causes untreated stormwater to flow to Fresh Pond
- Puddles, uneven pavement and winter icing safety hazards

Issue: old railroad corridor



Cut through path – exposed & compacted soils;
not ADA compliant



Debris and invasive plants
in rail bed

Issue: Community Garden



poor drainage, hard to access, poorly defined plots, not ADA compliant

Project Consistency with Existing Plans:

Fresh Pond Master Plan – “Bikeway Corridor” Priorities

- Corridor naturalization
- Visual buffering
- Removal of invasive plants
- New plantings from Approved List
- Community Garden ADA compliance
- Pond visibility

Consistency with other recent FPR Projects:

- Perimeter Path drainage & safety improvements
- Added amenities (benches, jogging path)
- Improved / natural aesthetics
- Balance of user needs
- Universal accessibility
- Native habitat restoration



Drainage / Community Garden Project Goals:

1. Protect Fresh Pond water quality.
2. Re-purpose & improve former rail corridor.
3. Improve Perimeter Path drainage & safety.
4. Buffer Path users from Parkway noise.
5. Expand & improve Community Garden.
6. Make Garden accessible for all.
7. Create & restore native habitat.



Project Constraints & Opportunities:

Constraint:

- Narrow, limited space for drainage improvements
- Repurposing rail corridor must follow Rail-to-Trail Best Practices

Solution:

- Moving limited portion of Perimeter Path to rail corridor caps part of rail bed and opens up space for stormwater treatment

“Rail to Trail” Path Relocation Benefits:

- ✓ Improved water quality protection of Reservoir
- ✓ Space for stormwater treatment
- ✓ Restoration of rail corridor



Design Approach Summary:

Challenge:

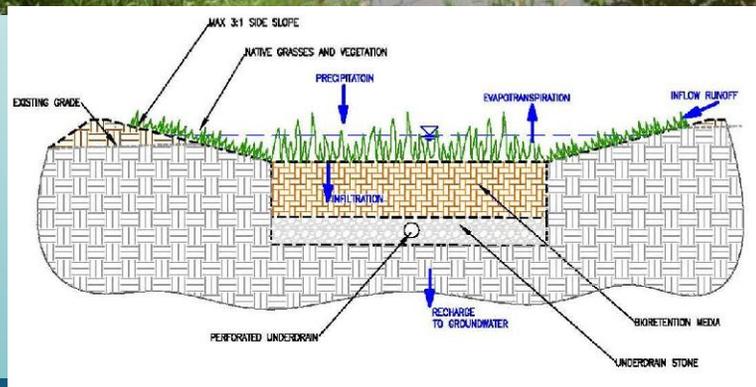
- Treat stormwater & create habitat
- Preserve vistas from new Path to Pond
- Provide buffer / screen between new Path and Parkway
- Garden remote; inaccessible
- **Avoid/minimize/mitigate wetland resource impacts**

Solution:

- Use green infrastructure bioswale
- Elevate new Path slightly to provide sightlines; use lower plantings
- Hummock features planted with native species for visual / sound barrier
- Relocate Garden more centrally; reconfigure for accessibility
- **Limit disturbance of bank; minimize mature native tree removal; create and restore native wetland habitat**



Bioretention/Green Infrastructure Examples



Stormwater Management & Wetland Resource Protection

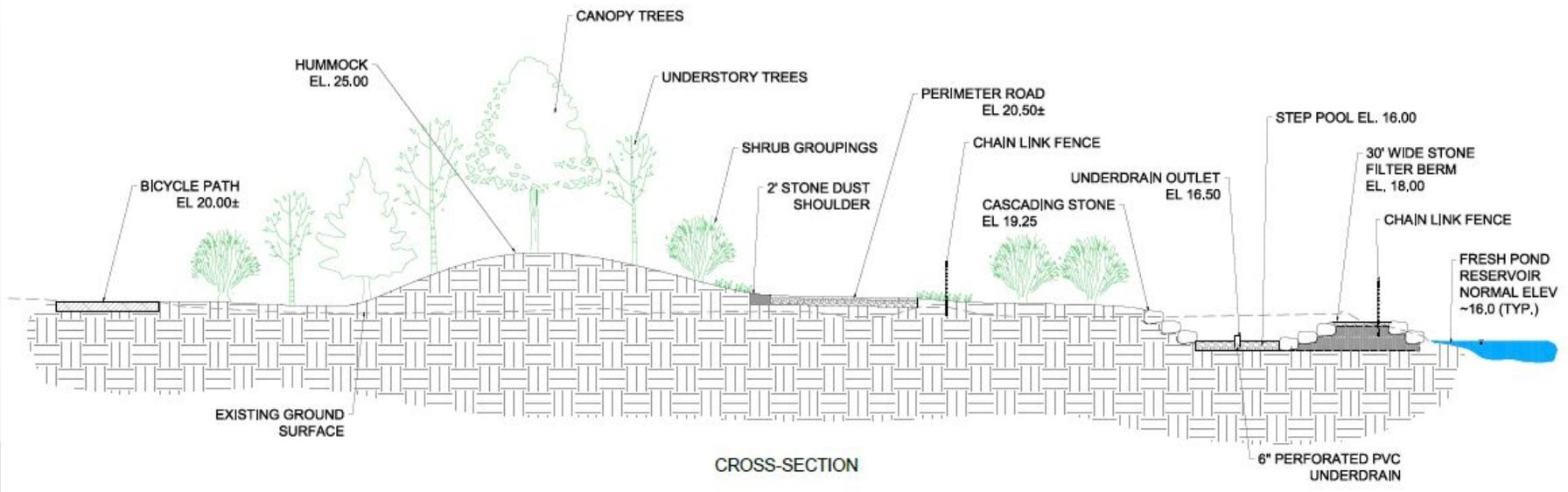
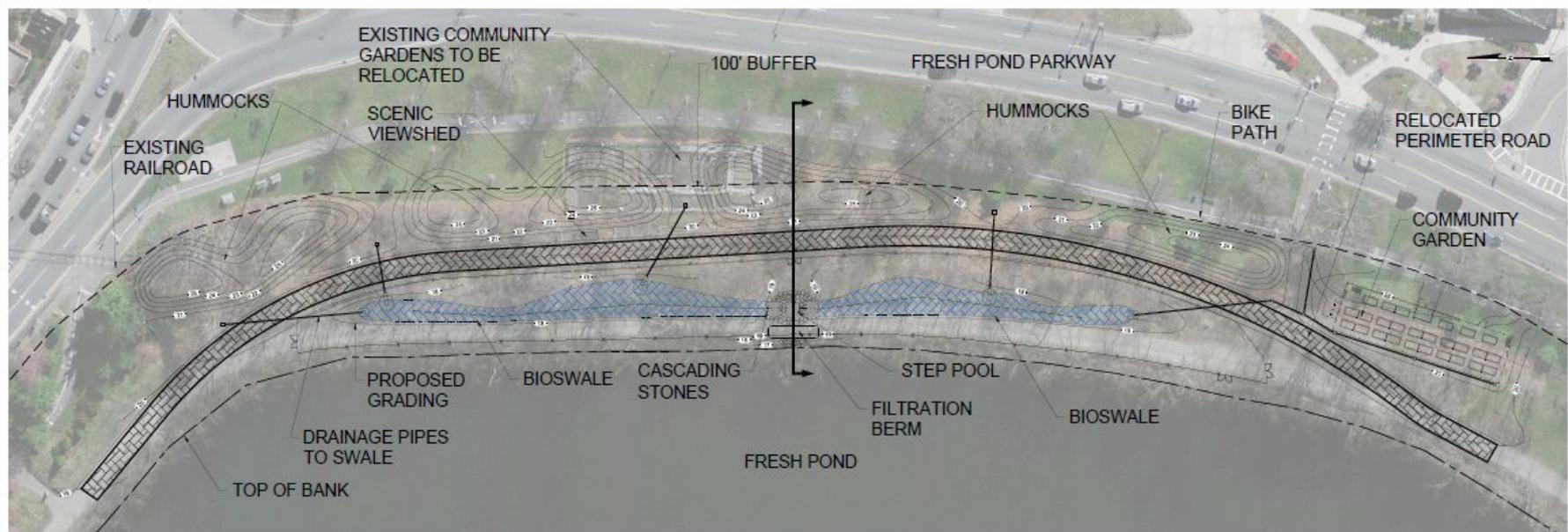
Low impact design measures:

- Minimize disturbance existing trees / shrubs
- Bioengineered vs hard piped
- Bioretention
- Maximize flow paths, disconnection impervious, no new point sources
- Use diversity of plant species native to region
- All applicable Stormwater Standards met

Stormwater Standards – Redevelopment project

Standard	Standard Met?	Notes
1 – No new untreated	✓	Prior direct drainage is now treated in bioswale, drains via stone filter berm; design to avoid scour
2- Peak Rate Attenuation	✓	Peak flows lower for 2, 10, 100 yr design storms
3 – Groundwater Recharge	✓ MEP	Required storage provided within bioretention media
4- Water Quality	✓	90% TSS removal for 1-inch of runoff captured and treated
5- LUHPPLd	n/a	Not applicable
6- Critical Areas	✓	ORW applies; 1" WQ volume treated; appropriate BMPs used
7- Redevelopment	✓	Meet Stds 1-6 to MEP. Meet 8 & 9; improve existing conditions
8- Construction Period	✓	Construction Pollution Prevention /Erosion Control Plan
9- O+M Plan	✓	O+M Plan provided
10- Illicit Discharges	✓	None expected. Compliance covered in O+M Plan

Grading & Drainage Design



Landscape Restoration & Planting approach:

- Minimize removal mature native trees while achieving water quality goals
- Input from Site walks with CWD / FPAB staff
- Remove invasive species
- Provide visual screening of Parkway
- Utilize native species and approved planting lists
- Reflective of beneficial native species relationships